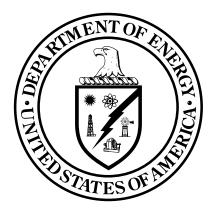


EXECUTIVE ORDER 12856

Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements

FOURTH ANNUAL REPORT

October 31, 1998



U.S. Department of Energy
Office of Environment, Safety & Health

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Introduction

On August 3, 1993, President Clinton signed Executive Order 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, "pledging the federal government to protect the environment by preventing pollution at the source." Executive Order 12856 directs all federal agencies, including the Department of Energy (DOE), to comply with the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and the Pollution Prevention Act of 1990 (PPA).

This report constitutes the Department's fourth annual progress report to the Administrator of the EPA as directed by Section 4-402 of Executive Order 12856. The report includes information DOE sites reported to the Toxic Chemical Release Inventory (TRI) for reporting year 1996 and describes DOE's pollution prevention activities during 1996 through early 1998.

The DOE pollution prevention program mission is to minimize the generation and release of pollutants to the environment by implementing cost-effective pollution prevention technologies, practices, and policies with partners in government and industry. In a December 27, 1994, memorandum, the Secretary of Energy embraced "pollution prevention not only as a strategy to reduce waste generation but also as the preferred approach to protect the environment, reduce future risks and costs associated with managing wastes and pollutants." The policies and practices outlined in the DOE pollution prevention program are largely implemented in the field, with Headquarters serving an oversight and coordinating role.

While DOE is fully committed to fulfilling the requirements of Executive Order 12856, the releases and transfers of TRI chemicals represent a small portion of DOE's total waste generation profile. Therefore, many of DOE's pollution prevention efforts are focused on other, more significant wastes streams, including: radioactive, mixed wastes, hazardous, and sanitary wastes. In a May 3, 1996, memorandum, the Secretary of Energy demonstrated the Department's continued commitment to pollution prevention by setting

additional complex-wide goals to be achieved by December 31, 1999 (Appendix A). To meet these commitments, DOE has prepared the 1996 Pollution Prevention Program Plan which establishes priorities and direction at Headquarters, the Operations Offices, and at the contractor and laboratory sites.

DOE has had a long-standing commitment to implementing the principles contained in Executive Order 12856. DOE's contractor-operated facilities have been active in complying with EPCRA since its passage in 1986. The Department has provided guidance and training materials on the general requirements of EPCRA and specific guidance and training on TRI reporting. DOE has led the federal sector in TRI reporting by voluntarily committing to report TRI releases prior to the issuance of the Executive Order and has worked with the Environmental Protection Agency (EPA) on resolving issues of federal facility TRI reporting.

DOE Policy 450.4, Safety Management System Policy, published October 15, 1996, mandates that safety management systems shall be used to systematically integrate safety (defined to encompass environment, safety, and health) into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment. Direct involvement of workers during the development and implementation of safety management systems is essential for their success. Developed in response to the Defense Nuclear Facilities Safety Board's recommendations, the safety management system consists of six components.

On June 27, 1997, the Department took another step to institutionalize the Integrated Safety Management System by publishing a Department of Energy Acquisition Regulations (DEAR) clause to be inserted into management and operating contracts at DOE facilities. The clause, entitled Integration of Environment, Safety, and Health into Work Planning and Execution, includes the statement that, "For purposes of this clause, safety encompasses environment, safety and health, including pollution prevention and waste minimization;...". Based on this DEAR clause language, the Department is including applicable pollution prevention language in revisions to a November 26, 1997 DOE guide, DOE G 450.4-1, Integrated Safety Management System Guide.

"For purposes of this (DEAR) clause, safety encompasses environment, safety and health, including pollution prevention and waste minimization;..."

E.O. 12856 Applicability

As stated in Section 2-202 of Executive Order 12856, DOE satisfies the definition of a federal agency as an Executive agency. DOE also satisfies the requirement in Section 1-102 of the Executive Order which pertains to owning or operating facilities. Therefore, the provisions of Executive Order 12856 are applicable to the Department and its sites.

Section 3-302 of the Executive Order directs "covered facilities" to develop pollution prevention plans no later than the end of 1995. For purposes of this section, DOE has defined a "covered facility" to be any DOE site which reports under EPCRA Section 313, TRI reporting. The Department has chosen this interpretation of "covered facilities" to focus planning efforts on the sites which must reduce their releases and transfers of toxic chemicals in order for DOE to reach its Department-wide reduction goals. For purposes of all other sections of the Executive Order, a "covered facility" is any facility which meets one or more of the reporting requirements of EPCRA Sections 302, 304, 311-312, and 313.

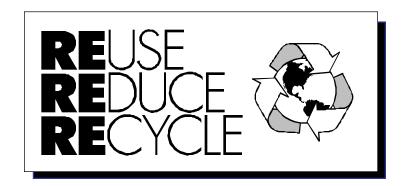
Further, Executive Order 12856, Section 2-203, and EPA's interpretive guidance define pollution prevention to be "source reduction", as defined in the PPA, and other practices that reduce or eliminate the creation of pollutants through: 1) increased efficiency in the use of raw materials, energy, water, or other natural resources; or 2) protection of natural resources by conservation.

Within the Department, however, pollution prevention includes all aspects of source reduction and incorporates waste minimization by expanding beyond the EPA definition of pollution prevention to include recycling. The Department's interpretation of pollution prevention is consistent with the 1996 International Organization for Standardization (ISO) Document 14001, Environmental Management Systems-Specification with Guidance for Use, which defines pollution prevention to be the "use of processes, practices, materials or products that avoid, reduce or control pollution, which may include recycling..." DOE's definition is also consistent with the Council on Environmental Quality's definition of pollution prevention.

Pollution prevention can be applied to all DOE pollution-generating activities, including manufacturing and production operations; facility operations, maintenance, and transportation; laboratory research; research, development and demonstration; weapons dismantlement; decontamination and decommissioning; and legacy waste and contaminated site cleanup.

The Department takes no other exceptions in interpreting the applicability and definitions of Executive Order 12856. The Department understands that Executive Order 12856 in no way alters the EPCRA and PPA reporting obligations of DOE government-owned/contractor-operated facilities.

DOE's interpretation of pollution prevention agrees with the definition in ISO 14001 which includes recycling.



DOE Pollution Prevention Policy & Strategy

n May 3, 1996, the Secretary of Energy issued the 1996 Department of Energy Pollution Prevention Program Plan, along with a Department-wide memorandum outlining the source reduction, recycling, and affirmative procurement goals contained therein. Appendix A of this report contains the complete memorandum. The goals, to be achieved by December 31, 1999, using calendar year 1993 as a baseline, include 50 percent reductions in radioactive, low-level mixed, and hazardous wastes from routine operations; a 50 percent reduction in total releases and off-site transfers of toxic chemicals; a 33 percent reduction in sanitary waste from routine operations; and a 33 percent recycling rate for all sanitary waste. The goals are coupled with site performance measures to assess progress made in achieving the goals.

As the principal cross-cutting guidance to DOE Headquarters, Operations Office, laboratory, and contractor management, the 1996 Program Plan establishes six immediate priorities to be completed by fiscal year 1998. The six priorities and DOE's progress on completing the priorities are summarized below.

Senior Management Commitment.

Guidance was issued to the sites for completion of their triennial Pollution Prevention Plans. Further, two pilot programs were initiated: re-engineering waste management and a generator set-aside fee (GSAF) program whereby waste generators are charged a fee, based upon the amount and type of waste generated. The fees are used to fund pollution prevention projects.

Site Goals. Sites were required to include in their pollution prevention plans quantitative, site-specific source reduction and recycling goals, designed to help meet the overall DOE goals. These site goals have been incorporated into FY 1998 Management Committments, and signed by the Operations Office Managers and by the Assistant Secretary for Environmental Management.

Performance Measures. Each fiscal year, the Secretary reaches an agreement with the President which lists measures by which the Department's performance will be evaluated.

In fiscal year 1997, the Department completed all of the pollution prevention items in the performance agreement, including:

- Completing pollution prevention plans showing waste reduction goals for 30 major sites which indicate that the Department will achieve the Secretarial waste reduction goals by December 31, 1999.
- Completing at least 100 pollution projects that reduce/avoid the generation of radioactive and mixed waste by 4,000 cubic meters; 213 pollution prevention projects which reduced radioactive and mixed waste by 9,340 cubic meters; and 282 projects which reduced hazardous wastes by 1,690 and sanitary waste by 11,300 metric tons.
- Ensuring that 60% of DOE purchases of EPA-designated products contained recycled or recovered materials, except where excluded by Section 402(b) of Executive Order 12873. DOE achieved most of this goal---56%. The shortfall was caused in part by a significant increase in the program's scope---from 5 to 24 reportable EPA-designated items.

Cost Saving Projects. The High Return-on-Investment (HROI) Program that was successfully piloted in 1996 was implemented at the Operations Office level in 1997. Hundreds of HROI-type projects were completed, thus saving the Department millions of dollars.

Design for Pollution Prevention. 1997 was a transition year for the Department's Pollution Prevention in Design Program. The leadership of this program shifted from the Office of Environmental Management to the Office of Field Management, from pollution prevention champions to project managers. Under Field Management's leadership, a project manager infrastructure was established, which will accelerate the process of making pollution prevention a part of DOE culture.

Ensure Compliance. DOE's Office of Environmental Policy and Assistance provides sites with policy, guidance, training opportunities and other technical assistance on compliance with applicable Federal, State, and departmental regulations governing pollution prevention.

The DOE 1996
Pollution
Prevention
Program Plan
established six
immediate
priorities to be
completed by
FY 1998.

Toxic Chemical Reduction Goals & Baseline

The Department's 1996 Pollution Prevention Program Plan commits DOE to the 50% reduction goal for releases of toxic chemicals to the environment and transfers of toxic chemicals for treatment and disposal across the DOE complex by December 31, 1999, as directed by Executive Order 12856. To assist in the Department-wide effort, the DOE site pollution prevention plans will address site-level goals for reducing their releases and transfers of listed toxic chemicals.

Further, Executive Order 12856 explicitly states that the baseline year for measuring progress toward the December 1999 goal shall be no later than the 1994 reporting year. Due to the Department's early commitment to TRI reporting and voluntary pollution prevention activities, DOE has seized a leadership opportunity by establishing 1993 as its baseline year for measurement, one year ahead of all other federal agencies, and one year ahead of the Executive Order requirement.

For the purpose of measurement, the Department's baseline is defined by the 23 DOE sites reporting 28 listed toxic chemicals on the 83 TRI Form R reports filed with EPA for the 1993 reporting year. This 1993 baseline is fixed and is amended only in the event that a site submits revised Form R reports. Future measurement against the 1993 baseline will include all sites reporting listed toxic chemicals for each reporting year regardless of whether they reported in the baseline year. Therefore, if a site which did not report in 1993 initiates reporting with the 1994 reporting year, that site's data will be included in the DOE total releases and transfers to be compared against the 1993 baseline. Likewise, the baseline will remain unchanged if a site which reported in the 1993 baseline ceases to report in 1994.

The 50% reduction goal specified in Executive Order 12856 applies only to the total releases of toxic chemicals to the environment and transfers of toxic chemicals for treatment and disposal. It does not include off-site transfers for recycling and energy recovery. Thus, only the releases and off-site transfers reported under Sections 8.1 and 8.7 of the annual Form R report are used in measuring progress toward the 1999 reduction goal. Section 8.1 (quantity released) of the Form R report is the amount of toxic chemicals directly discharged to air, water, land, and injected underground at the site. Section 8.1 also includes amounts sent offsite for disposal. Section 8.7 (quantity treated off-site) of the Form R report is the amount of toxic chemicals sent off-site to be treated, including quantities sent to publicly owned treatment works.

In 1996, site revisions, withdrawals, and validation with EPA's Toxic Release Inventory System (TRIS) resulted in a small adjustment to the baseline. The previously reported baseline of 4,677,836 pounds has been amended to 4,677,346 pounds.

To reach the 50% reduction goal by December 31, 1999, DOE must achieve an overall 2,338,673 pound reduction in the reported releases of toxic chemicals to the environment and transfers of toxic chemicals for treatment and disposal. To achieve this reduction, the Department needs to focus efforts on the specific chemicals and sites which contribute the largest amounts to the complex-wide total each year. Figure 1 shows the total DOE TRI releases and transfers for the 1994 through 1996 reporting years compared to the 1993 baseline year.

The Department has taken a leadership opportunity by establishing 1993 as its baseline year, one year ahead of all other federal agencies.

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1996 TRI Reporting

For 1996, 19 DOE sites filed a total of 52 TRI Forms (Form Rs and Form As) for 22 listed TRI chemicals. Two sites each submitted one Form A. The total number of Form Rs submitted was 50 by 18 DOE sites. Four sites, Brookhaven, Hanford, Portsmouth, and Sandia National Lab-NM which met reporting requirements in 1995, did not meet reporting thresholds for any TRI chemicals in 1996. Argonne National Lab- East, which did not meet reporting thresholds in 1995 did for one chemical in 1996. Also the Bryan Mound, Weeks Island, and West Hackberry Strategic Petroleum Reserve (SPR) Sites met reporting requirements for the first time in 1996. Tables 1 and 2 show the 1996 total of releases and transfers (Form R sections 8.1 plus 8.7) as compared to the 1993 baseline by chemical and by site.

The 1996 DOE complex-wide total of releases and transfers for treatment and disposal is 733,618 pounds. This is an increase of 147,155 pounds from the 1995 total releases and transfers. Although, in 1994, the Naval Petroleum Reserve #1's (NPR-1) implemented better measurement practices for underground injection of methanol, a significant part of the 1996 increase was from NPR-1's reported on-site underground injection of methanol. The site uses methanol for freeze protection in pipelines. Therefore, the amount of methanol injected underground is dependent on the winter weather.

The 1996 total releases and tranfers represents an 84% (3.9 million pounds) reduction in releases and transfers from the 1993 baseline. However, a large part of this reduction was not achieved through source reduction methods as directed by Executive Order 12856. Approximately 3.3 million pounds of the reduction in methanol releases is due to the NPR-1's implementation, in 1994, of better measurement practices for underground injection of methanol. Deletions of acetone and non-aerosol forms of sulfuric acid, and non-aerosol forms of hydrochloric acid from the TRI list of chemicals are largely the reason for reported reductions in these chemicals.

However, if the NPR-1's methanol reports and all the sulfuric acid, acetone, and hydrochloric acid reports for 1993 -1996 are excluded, DOE has achieved a 62% reduction in reported releases and transfers complex-wide. While reductions in chemicals at some sites can be attributed to ceased or decreased production/operation, some sites continue to achieve true source reductions in TRI chemicals through: chemical substitutions; equipment and process modifications; and recycling rather than disposing of chemicals. Figure 2 identifies some of the source reduction methods implemented by DOE sites.

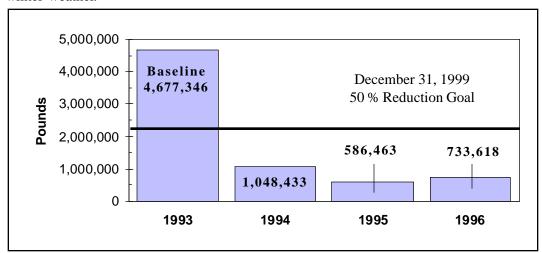


Figure 1. Total DOE TRI Releases and Transfers (in pounds)

1996, DOE has achieved an 84% reduction in the complex-wide releases of toxic chemicals to the environment and transfers of toxic chemicals for treatment and disposal.

From 1993 to

Table 1: Comparison of 1996 & 1993 DOE TRI Reporting by Toxic Chemical (in pounds) Understanding

	1993	1996	1993-1996
TRI Chemical	Section 8.1+8.7	Section 8.1+8.7	% Change
Methanol	3,665,979	539,979	(85%)
Sulfuric Acid	311,903	_	(100%)
Dichlorotetrafluoroethane	170,000	_	(100%)
Hydrochloric Acid	154,745	1,030	(99%)
Nitric Acid	126,268	12,424	(90%)
Ammonia	113,350	35,095	(69%)
1,1,1-Trichloroethane	20,405	_	(100%)
Chlorine	18,003		(100%)
Xylene (mixed isomers)	16,644	34,978	110%
Trichloroethylene	15,900	-	(100%)
Toluene	12,408	25,000	101%
Methyl Ethyl Ketone	9,800	_	(100%)
Dichloromethane	9,289	_	(100%)
Methyl Isobutyl Ketone	9,004	_	(100%)
Lead	8,666	3,905	(55%)
Hydrogen Fluoride	3,519	2,620	(26%)
Ethylene Glycol	2,808	2,071	(26%)
Acetone	1,930	_	(100%)
Trichlorofluoromethane	1,800	650	(64%)
Methyl Tert-Butyl Ether	1,674	_	(100%)
1,2,4- Trimethylbenzene	573	108	(81%)
Benzene	378	22,211	5,775%
Phosphoric Acid	50	_	(100%)
Chlorodifluoromethane		650	N/A
Freon 113	_	4,001	N/A
Other TRI Chemicals	2,250	48,869	2,073%
TOTAL	4,677,346	733,618	(84%)

Understanding our data...

These three TRI chemicals represent 83% of the DOE 1996 total releases and transfers for treatment and disposal.

Table 2: Comparison of 1996 & 1993 DOE TRI Reporting by Site (in pounds)

DOE Site	1993 Section 8.1+8.7	1996 Section 8.1+8.7	1993-1996 % Change
Naval Petroleum Reserve #1	3,782,920	536,116	(86%)
Idaho National Engineering Lab ¹	369,454	8,500	(98%)
Portsmouth Gas. Diff. Plant	171,918	_ /	(100%)
Energy Tech. Engr. Center	101,249	11,511	(89%)
Savannah River Site	79,372	23,910	(70%)
Oak Ridge Y-12 Plant	74,201	28,317	(62%)
Pinellas Plant	45,824	- /	(100%)
Stanford Linear Accelerator	12,300	- /	(100%)
Oak Ridge National Lab	7,353	3,495	(52%)
Oak Ridge K-25 Site ²	6,388	230	(96%)
Brookhaven National Lab	5,935	- /	(100%)
Los Alamos National Lab	5,570	730	(87%)
Rocky Flats Plant	3,555	- /	(100%)
Fermi National Accelerator	3,157	1,817	(42%)
Kansas City Plant	1,400	140	(90%)
Naval Petroleum Reserve #3	95	102,067	107,339%
Argonne National Lab-East	4,007	650	(84%)
West Valley Demonstration Proj.		1,008	N/A
Other DOE Sites	2,648	15,127	471%
TOTAL	4,677,346	733,618	(84%)

NPR-1 and NPR-3 account for 87% of DOE's 1996 total releases and transfers for treatment and disposal.

¹ Now known as Idaho National Engineering and Environmental Lab

² Now known as East Tennessee Technology Park

The dashes (--) indicate no reports were submitted for these chemicals.

1996 TRI Reporting (continued)

Fermi National Accelerator

In 1996, Fermi recycled **ethylene glycol** back into the system rather than discarding the chemical. For several operations, **Freon 113** was replaced with less hazardous solvents.

Brookhaven National Laboratory (BNL)

BNL substituted an ultrasonic cleaning system which uses detergents and weak acids in place of acid etching baths which use **hydrofluoric** and **nitric acids**.

Oak Ridge National Laboratory (ORNL)

ORNL replaced an analytical chemistry process with a digestion process that uses both a smaller sample size and fewer digestion chemicals, such as **nitric acid**. In addition, analytical accuracy was improved which contributed to a reduction in nitric acid.

Pantex Plant

The Pantex Plant used a hazardous black oxide system to prevent metal tool corrosion which involved several RCRA hazardous chemicals, such as **hydrochloric acid**. The old system was replaced with a new and efficient system called Presto Black™. The chemicals in the new system need to be replenished about once every three years instead of every year with the old system. Therefore, about 475 gallons of hazardous waste is eliminated each year.

Lawrence Livermore National Laboratory (LLNL)

LLNL continues to replace **Freon 113** with alternative solvents combined with alternative cleaning methods (i.e., ultrasound) in most small parts cleaning operations. For the larger operations, Freon 113 has been recycled.

Hanford Site

In 1996, Hanford used proplyene glycol, a non-TRI chemical, instead of **ethylene glycol** as a coolant/water mix for a new chiller being installed for tank sluicing. In addition, Hanford recycled lead from a telecommunication line jacket rather than disposing of it.

Figure 2. Examples of DOE Source Reduction Activities

Oak Ridge Y-12 Plant

The Y-12 Plant reduced releases of **nitric acid** by decreasing plant operational activities and incorporating recycling in its uranium recovery process. Also, at the Y-12 Plant's various organizations, excess chemicals from the plant's hazardous waste inventory have been reused as process materials. These chemicals include: **carbon tetrachloride** and powdered **beryllium**.

Portsmouth Gaseous Diffusion Plant

Portsmouth reduced its use of **ethylene glycol** by decreasing its recirculating rechiller water additive. **Ammonia** usage and release declined due to fine tuning of operational parameters at the Cogeneration Plant at Portsmouth.

East Tennessee Technology Park (ETTP)

ETTP purchased new instruments for the analytical labs which reduces the amount of **sulfuric acid** waste generated.

Pacific Northwest National Laboratory (PNNL)

PNNL reduced their TRI hazardous waste by distilling and reusing **xylene** and **methanol**.

Argonne National Lab-East (ANL-E)

ANL-E continues to implement on-site recycling and collection of emissions during transfer of **chlorodifluoromethane**. Also ANL-E converted the Building 200 chill water system that used a 50/50 **ethylene glycol**/water solution to an integrated system that uses only water and no ethylene glycol.

Idaho National Engineering and Environmental Laboratory (INEEL)

A nitric acid cleaning process was replaced with an environmentally friendly high-pressure water cleaning system. INEEL also recycled **lead** and **silver** scrap.

1996 TRI Reporting (continued)

Table 3 shows DOE's reported TRI onsite and off-site releases, other on-site waste management, and transfers for further waste management for reporting years 1993-1996. DOE's total on-and off-site releases decreased from 4,643,767 pounds in 1993 to 741,811 pounds in 1996. There was a reduction reported in total air emissions, onsite land releases, and transfers off-site to disposal each year. Releases to surface water increased in 1995 and 1996. A significant part of this increase was due to Savannah River Site's first time reporting for nitrate compounds in 1995, and increased release in 1996. Underground injection decreased each year until 1996 when the reported releases increased. This increase

was due to the NPR-1 facility's 1996 reported on-site increase of underground injection of methanol, which resulted from the increased use of methanol for freeze protection in pipelines due to colder weather.

The reported total of other on-site waste management and transfers off-site for further waste management decreased from 1993 to 1996. Other on-site waste management, including, recycled on-site, energy recovery on-site, and treated on-site decreased by 87% from 1993 to 1996. The amount recycled on-site increased between 1995 and 1996 because of the Idaho National Engineering and Environmental Lab's increase in nitric acid recycling and the Oak

Table 3: 1993-1996 DOE TRI On-Site and Off-Site Releases, Other On-Site Waste Management, and Transfers for Further Waste Management Reported (in pounds)

	1993	1994	1995	1996	Change 1	1993 to 1996
	<u> </u>				(Pounds)	(Percent)
On-Site Releases						
Total Air Emissions (5.1+5.2)	555,557	291,694	203,097	196,948	-358,609	(65%)
Surface Water (5.3)	12,918	3,766	10,782	27,461	14,543	113%
Underground Injection (5.4)	3,762,430	445,531	325,751	505,541	-3,256,889	(87%)
On-Site Land Releases (5.5)	301,306	232,273	42,277	10,687	-290,619	(96%)
TOTAL	4,632,211	973,264	581,907	740,637	-3,891,574	(84%)
Off-Site Releases						
Transfers Off-Site to Disposal (6.2)	11,556	11,853	2,501	1,174	-10,382	(90%)
TOTAL ON- AND OFF-SITE RELEASI	ES 4,643,767	985,117	584,408	741,811	-3,901,956	(84%)
Other On-Site Waste Management						
Recycled On-Site (8.4)	2,890,709	2,521,712	307,661	362,585	-2,528,124	(87%)
Energy Recovery On-Site (8.2)	0	0	0	0	0	0
Treated On-Site (8.6)	2,646,803	1,175,492	383,490	369,847	-2,276,956	(86%)
TOTAL	5,537,512	3,697,204	691,151	732,432	-4,805,080	(87%)
Transfers Off-Site for Further						
Waste Management (6.2)						
Transfers to Recycling	72,511	67,592	93,535	28,771	-43,740	(60%)
Transfers to Energy Recovery	0	0	0	0	0	0
Transfers to Treatment	21,965	44,785	7,320	2,240	-19,725	(90%)
Transfers to POTWs	415	260	0	0	-415	(100%)
Other Off-Site Transfers	0	0	0	0	0	0
TOTAL	94,891	112,637	100,855	31,011	-63,880	(67%)

Note: Numbers in parenthesis after release type refers to the corresponding Form R section.

Ridge National Lab's increase in lead recycling. Transfers off-site for further waste management, including, transfers to recycling, energy recovery, treatment, POTWs, and other off-site transfers decreased by 63,880 pounds from 1993 to 1996.

Table 4 shows the same data as table 3 except it excludes delisted chemicals, chemicals added to the TRI in 1995, and all ammonia, hydrochloric acid, sulfuric acid, and NPR-1's methanol. For DOE, the delisted chemicals include acetone (effective with 1994 reporting year) and ammonium nitrate (solution) (effective with the 1995 reporting year). DOE facilities have reported on n-hexane and nitrate compounds when they were added to the TRI chemical list in 1995.

Analysis of this data subset indicates there was a 65% decrease in the total on- and off-site releases from 1993 to 1996. When the chemicals mentioned above are excluded, surface water discharge increased from 1995 to 1996 by about 2,000 pounds compared to an increase of about 16,000 pounds when all chemicals are included (see table 3). Underground injection decreased by about 4,000 pounds from 1994 to 1995 compared to an increase of approximately 180,000 pounds when all chemicals are included (see table 3).

In table 4, increases in on-site land releases and transfers off-site for further waste management (from 1993 to 1996), total air emissions (from 1995 to 1996), and recycled onsite (from 1994 through 1996) are a result of the excluded chemicals accounting for more of the reported totals during reporting years 1993-1996.

Table 4: 1993-1996 DOE TRI On-Site and Off-Site Releases, Other On-Site Waste Management, and Transfers for Further Waste Management Reported (in pounds) excluding delisted chemicals, chemicals added in 1995, and ammonia, hydrochloric acid, sulfuric acid, and NPR-1's methanol.

	1993	1994	1995	1996	Change 1	1993 to 1996
					(Pounds)	(Percent)
On-Site Releases						
Total Air Emissions (5.1+5.2)	438,536	215,664	137,669	149,534	-289,002	(66%)
Surface Water (5.3)	12,908	3,766	3,542	5,803	-7,105	(55%)
Underground Injection (5.4)	12,412	10,401	10,509	6,158	-6,254	(50%)
On-Site Land Releases (5.5)	10,796	12,273	39,012	9,047	-1,749	(16%)
TOTAL	474,652	242,104	190,732	170,542	-304,110	(64%)
Off-Site Releases						
Transfers Off-Site to Disposal (6.2)	11,556	3,848	2,501	1,174	-10,382	(90%)
TOTAL ON- AND OFF-SITE RELEASES	486,208	245,952	193,233	171,716	-314,492	(65%)
Other On-Site Waste Management						
Recycled On-Site (8.4)	184,583	104,637	307,661	362,585	178,002	(96%)
Energy Recovery On-Site (8.2)	0	0	0	0	0	0
Treated On-Site (8.6)	1,066,023	302,934	277,390	208,427	-857,596	(80%)
TOTAL	1,250,606	407,571	585,051	571,012	-679,594	(54%)
Transfers Off-Site for Further						
Waste Management (6.2)						
Transfers to Recycling	4,400	25,700	59,735	7,282	2,882	(66%)
Transfers to Energy Recovery	0	0	0	0	0	0
Transfers to Treatment	2,774	26,853	7,020	2,069	-705	(25%)
Transfers to POTWs	165	10	0	0	-165	(100%)
Other Off-Site Transfers	0	0	0	0	0	0
TOTAL	7,339	52,563	66,755	9,351	2,012	(27%)

Note: Numbers in parenthesis after release type refers to the corresponding Form R section.

EPCRA Reporting

Executive Order 12856 directs all federal facilities to comply with the EPCRA reporting requirements described below, regardless of Standard Industrial Classification (SIC) code. EPCRA contains four major provisions: planning for chemical emergencies (Sections 302-303); emergency notification of chemical accidents and releases (Section 304); reporting of hazardous chemical inventories (Sections 311 and 312); and toxic chemical release inventory reporting (Section 313).

These provisions require DOE sites to notify state emergency response commissions (SERCs) and local emergency planning committees (LEPCs) of the presence of potentially hazardous substances on their sites and to report on the inventories and environmental releases of those substances. The intent of these requirements is to provide the public with information on hazardous chemicals in their communities, enhance public awareness of chemical hazards, and facilitate development of state and local emergency response plans.

While both Executive Order 12856 and DOE policy direct all "covered" facilities to comply with these EPCRA provisions prior to 1995, quantitative information was only available for the "covered" DOE facilities which reported under EPCRA section 313. Beginning with the 1995 Annual Site

Environmental Reports (ASERs), sites provided more complete information on EPCRA compliance. The information presented in Table 6 and summarized below was collected as part of an internal validation of the 1996 DOE TRI data reported by the 19 DOE sites (see Table 5) and some additional information obtained from the 1996 ASERs.

EPCRA 302-303. Executive Order 12856 states that federal facilities were to submit their emergency planning notification to the cognizant SERC and LEPC by March 3, 1994 (EPCRA 302). Additionally, facilities were directed to submit information for the committees to prepare Comprehensive Emergency Response Plans by August 3, 1994 (EPCRA 303). For 1996, 27 DOE sites either submitted the appropriate new or revised information or were not required to submit information because they fulfilled this requirement in a prior year.

EPCRA 304. In January 1994, federal facilities were to begin submitting emergency notifications of releases of Extremely Hazardous Substances (EHSs) (EPCRA 304). In 1996, 6 sites submitted notifications for EHS releases while 20 sites did not have releases requiring such a notification.

Beginning with the 1995 ASERs, sites provided more complete information on EPCRA compliance.

Table 5: The 19 DOE Sites Reporting under EPCRA 313 During 1996

Argonne National Laboratory- East

Bryan Mound SPR Site

East Tennessee Technology Park¹

Energy Technology Engineering Center

Fermi National Accelerator

Fernald Environmental Management Project

Idaho National Engineering

and Environmental Laboratory

Kansas City Plant

Lawrence Livermore National Laboratory

Los Alamos National Laboratory

Naval Petroleum Reserve #1

Naval Petroleum Reserve #3

Oak Ridge National Laboratory

Oak Ridge Y-12 Plant

Paducah Site²

Savannah River Site

Weeks Island SPR Site

West Hackberry SPR Site

West Valley Demonstration Project

¹ Formerly known as the Oak Ridge K-25 Site.

² Paducah Site only submitted one Form A.

EPCRA 311-312. By August 3, 1994, Executive Order 12856 directed facilities to submit Material Safety Data Sheets (MSDSs) as required by EPCRA Section 311. Also, by March 1, 1995, federal facilities were to submit an emergency and hazardous chemical inventory form (Tier I/II report) under EPCRA 312. In 1996, 25 sites complied with these requirements, while 6 reported that they were not required.

EPCRA 313. By July 1, 1995, federal facilities meeting reporting requirements were to submit TRI Form R reports. In 1996, 18 sites submitted Form Rs and 1 site submitted a Form A while 13 sites were not required. Reporting Year 1997 TRI data was reported in August 1998 and will be reported in next year's Annual Report.

Table 6: Summary of 1993 and 1994 EPCRA Reporting by 26 DOE Facilities, Summary of 1995 EPCRA Reporting by 38 DOE Facilities and Summary of 1996 EPCRA Reporting by 32 DOE Facilities.

		Not
YES	NO	Required
14 Sites	0 Sites	12 Sites ^a
11 Sites	1 Site	14 Sites ^b
24 Sites	0 Sites	2 Sites
23 Sites	0 Sites	3 Sites ^c
15 Sites	0 Sites	11 Sites ^a
12 Sites	0 Sites	14 Sites ^b
25 Sites	0 Sites	1 Site
22 Sites	0 Sites	4 Sites ^c
14 Sites	0 Sites	18 Sites ^a
7 Sites	1 Sites	25 Sites ^b
30 Sites ^d	0 Sites	6 Sites
18 Sites	0 Sites	20 Sites ^c
9 Sites	0 Sites	18 Sites ^a
6 Sites	1 Sites	20 Sites ^b
25 Sites ^e	0 Sites	6 Sites
19 Sites	0 Sites	13 Sites ^c
	14 Sites 11 Sites 24 Sites 24 Sites 23 Sites 15 Sites 12 Sites 25 Sites 22 Sites 30 Sites 18 Sites 9 Sites 6 Sites 25 Sites	14 Sites 0 Sites 11 Sites 1 Site 24 Sites 0 Sites 23 Sites 0 Sites 15 Sites 0 Sites 12 Sites 0 Sites 25 Sites 0 Sites 22 Sites 0 Sites 14 Sites 0 Sites 27 Sites 1 Sites 30 Sites 1 Sites 18 Sites 0 Sites 18 Sites 0 Sites 18 Sites 0 Sites 18 Sites 0 Sites

^aEPCRA 302-303 notification requirement was fulfilled in a prior year

^b Sites did not have EHS releases requiring EPCRA 304 notification

^c Sites did not exceed the EPCRA 313 manufacture, process, or otherwise use thresholds

^dTwo sites indicated "yes" for reporting under EPCRA section 312 only. One site indicated "yes" for reporting under EPCRA section 311 only.

^eThree sites indicated "yes" for reporting under EPCRA section 312 only.

^{*1995} data includes recent updates.

Reviews & Compliance

In 1997, DOE initiated a chemical use reporting pilot program at two DOE sites. The sites evaluated the burden and benefit of chemical use reporting.

Sections 3-302(d), 5-502, 5-503, and 5-506 of Executive Order 12856 pertain to ensuring compliance with the provisions of the order. Specifically, these sections direct agencies to: 1) conduct assessments as necessary to ensure the development of site pollution prevention plans; 2) take all necessary actions to prevent pollution; 3) conduct internal reviews and audits to monitor compliance with the EPCRA and PPA reporting requirements; and 4) when the agency is notified of non-compliance, achieve compliance as promptly as practicable.

As discussed on the next page, the Department had an internal mechanism, DOE Order 5400.1, "General Environmental Protection Program", in place (in 1988) prior to Executive Order 12856 which required the development of site pollution prevention plans. Second, the Department is taking the necessary steps to prevent pollution as evidenced by its commitment in the DOE pollution prevention policy to "reduce the generation of all waste streams." This leadership has been further demonstrated by the May 3, 1996, Secretarial memorandum which defines additional goals developed to support the DOE policy.

The Department has two occurrence reporting systems which track notices of non-compliance, notices of violation and similar documents which field sites receive from state and federal regulators. During the period from January to December 1997, there were no reported violations or reports of non-compliance with EPCRA.

Desites participated in a review of EPA's Advanced Notice of Proposed Rulemaking regarding the expansion of reporting elements to include chemical use reporting under EPCRA section 313 (TRI-Phase 3). DOE provided EPA with consolidated Headquarters and Operations Office comments regarding this Advanced Notice. The comments generally supported

EPA's efforts to expand the information made available to the public but raised concerns about the potential for misunderstanding and the additional burden that facilities would face. DOE's comments are available on the Office of Environmental Policy and Assistance (OEPA) worldwide website at http://tis-nt.eh.doe.gov/oepa.

In addition, in 1997, DOE initiated a chemical use reporting pilot program at two DOE sites. The sites used the state of New Jersey's chemical use reporting forms for each 1996 TRI Form R prepared. Upon completion of the forms, the sites evaluated the burden and benefit of chemical use reporting. The sites concluded that some of the data was not readily available and would require changes in current tracking/reporting systems or development of new systems. The sites also felt that chemical use reporting would further pollution prevention and increase awareness and accuracy of chemical procurement and use tracking.

On May 1, 1997, EPA's final rule regarding the addition of facilities in certain industry sectors was published in the *Federal Register*. Seven industry groups have been added to the list of facilities subject to reporting requirements of section 313 of EPCRA and section 6607 of the PPA. Reporting for these facilities within these industry groups will begin with the 1998 reporting year.

Purthermore, DOE sites are required by DOE Order 231.1, "Environmental, Safety, and Health Reporting" to prepare comprehensive environmental reports or Annual Site Environmental Reports (ASERs) each year. One section of each site report discusses compliance with the EPCRA and PPA reporting requirements. The guidance for the preparation of the ASER report has been revised so that sites will provide more complete information on EPCRA compliance.

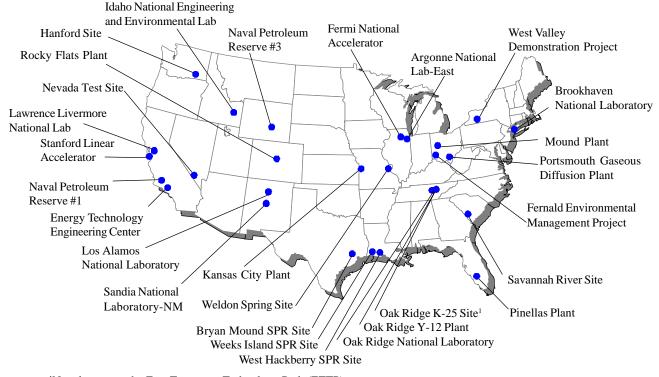
Pollution Prevention Plans

Inder Section 3-302(d) of Executive Order 12856, every "covered facility" must prepare a facility-wide pollution prevention plan no later than the close of 1995. This plan shall describe how the site intends to help the Department meet the complex-wide 50% reduction goal by December 1999.

Prior to the issuance of the Executive Order, DOE guidance issued by the Deputy Secretary of Energy established that all DOE waste-generating sites were to prepare a waste minimization program plan and a pollution prevention awareness program plan in accordance with DOE Order 5400.1, General Environmental Protection Program. Although DOE Order 5400.1 was modified on September 30, 1995, the sections pertaining to the preparation, submission, and revision of these plans remain intact. Also, these two plans have been consolidated into one pollution prevention plan which integrates the pollution prevention activities of all the waste generating organizations at that site. Since DOE facilities that report under EPCRA Section 313 are also waste generators, the DOE pollution prevention plan fulfills the requirement for a pollution prevention plan under Executive Order 12856.

To date, all of the sites (identified in Figure 3 below) that report under EPCRA Section 313 have prepared pollution prevention plans. Additionally, since DOE Order 5400.1 directs all DOE wastegenerating facilities to prepare pollution prevention plans, numerous other DOE sites not reporting under EPCRA Section 313 also have plans in place. Site plans were last updated in 1997. In a February 17, 1997 memorandum, the Undersecretary encouraged sites to use the Code of **Environmental Management Principles** (CEMP), when developing their pollution prevention plans, as a means of accomplishing the Department's pollution prevention objectives. Copies of the CEMP Implementation Guide were distributed to assist the sites in this efforts.

DOE sites must update these plans every three years with the next update due in 2000. Many DOE sites have the text portions of their plans available to the public through their Internet homepage.



¹Now known as the East Tennessee Technology Park (ETTP)

Figure 3. DOE Sites which reported under EPCRA Section 313 (TRI) for one or more of the 1993-1996 reporting years.

Acquisition & Procurement

Section 3-303 of Executive Order 12856 directs each agency to set goals for eliminating or reducing the unnecessary acquisition of products containing extremely hazardous substances (EHSs) and toxic chemicals and for voluntarily reducing the manufacture, process, and use of EHSs and toxic chemicals. DOE also is expected to review specifications and standards documents to identify opportunities to eliminate or reduce the use of EHSs and toxic chemicals.

To date, DOE has not yet set specific numeric goals for this plan called for under Section 3-303 of Executive Order 12856. However, these goals are inherent in each site's efforts to help DOE achieve the 50% reduction in the releases and transfers of toxic chemicals by December 31, 1999. For example, at Oak Ridge National Laboratory, acquisition of new lead for shielding purposes has been stopped. Instead, researchers must use internal sources of lead for their shielding needs. In addition to limiting the acquisition of new lead, the cost of using internal stocks of lead is below the purchase price of new lead.

As a significant purchaser of materials and equipment, DOE is committed to promoting the purchase of less toxic, more durable, more energy-efficient materials, including products composed of recovered materials, for its own operations. The Department is committed to ensuring the use of environmentally sound practices in the procurement process, including updating specifications, contracts, and policies. This will ensure that DOE and its contractors act according to existing federal, state, and local regulations and DOE Orders and policies. In addition to the requirements of Executive Order 12856, DOE has established programs to implement the requirements of Executive Order 12843, Procurement Requirements and Policies for Ozone-Depleting Substances, Executive Order 12873, Federal Acquisition, Recycling, and Waste Prevention, and Executive Order 12902, Energy Efficiency and Water Conservation at Federal Facilities.

DOE programmatic offices and field facilities have continued to make strides in reducing the use of ozone-depleting substances. In 1996, Headquarters Office of Defense Programs received a DOE pollution prevention award for its work in facilitating procurement of ozone-friendly, energy efficient chillers. In late 1996 and early 1997, all DOE organizations that were substantive users of ozonedepleting chemicals transmitted information to Headquarters on their present and estimated future ozone-depleting substance inventory data and successful efforts and exemplary practices in eliminating use of these chemicals. A summary of this information is found in the Report on the Department of Energy's Inventory and Phaseout of Ozone-Depleting Substances (ODS). This report is found on OEPA's web site (http://tis-nt.eh.doe.gov/oepa/guidance/ ozone).

To continue with the implementation of Executive Order 12873, the Office of Human Resources and Administration is partnering with the Office of Environmental Management's Pollution Prevention Program. In addition, the Department has issued its updated affirmative procurement guidance, Department of Energy Affirmative Procurement Program for Products Containing Recovered Materials: 1996 Guidance. This document continues the Department's aggressive affirmative procurement program by providing the necessary guidance to field sites regarding procurement goals and reporting requirements. The 1996 Guidance is available through EPIC (http:// epic.er.doe.gov/epic/html/afproc96.sph). On December 16, 1997, a new DOE Agency Environmental Executive, the Assistant Secretary, Office of Energy Efficiency and Renewable Energy, was appointed as directed under the order.

Effective May 1, 1996, the Environmental Protection Agency added 19 new items containing recovered materials to the original five items. In addition, EPA has designated

an additional 12 new items containing recovered materials to the Federal affirmative procurement program which will be effective on November 13, 1998. A final ruling was issued in the *Federal Register* on November 13, 1997. This recent amendment brings the total of EPA-designated items to 36.

DOE's OEPA issued an Environmental Guidance Regulatory Bulletin in March 1998 on "Second Comprehensive Guideline for Procurement of Products Containing Recovered Materials." This Regulatory Bulletin discusses the provisions of the new rule and the impact of the new rule on DOE operations. This guidance can also be found on the OEPA web site.

DOE amended its acquisition regulation, the DEAR, to include a contract clause in all DOE management and operating contracts regarding the acquisition and use of environmentally preferable products and services and requiring compliance with the Executive Order 12873 and other requirements. On March 2, 1998, a Department-wide memo was distributed stating that each site must track and annually report the purchases of items on the list of EPA-designated items. Any concerns about the availability, quality, or price of the

recycled items must have written justification for not buying recycled and kept on file and reported annually with the affirmative procurement data.

The Department's affirmative procurement goal is to increase procurement of EPA-designated recycled products to 100 percent by FY 1999, except where they are not commercially available competitively at a reasonable price or do not meet performance standards. The percentage of EPAdesignated items containing recovered materials purchased by DOE has increased form 29 percent in FY 1992 to 53 percent in FY 1997 (see figure 4). In FY 1997, DOE purchased approximately \$46 million worth of EPA-designated items, of which about \$24.1 million contained recovered materials.

DOE sites do their reporting on the Internet. The DOE reporting software is available for use by other agencies.

Many DOE sites are working to make the procurement of environmentally preferable products easier. For example, staff at the Oak Ridge National Lab can access their homepage and get descriptions about the recycled content of products available to them through the Accelerated Vendor Inventory Delivery System.

Pollution Prevention Technology

xecutive Order 12856 encourages agencies to develop and test innovative pollution prevention technologies and to develop partnerships with industry to assess and deploy such technologies. Work with external partners is beneficial to DOE's internal pollution prevention programs as technologies developed with industry and other federal agencies are applied to DOE operations and facilities. External partnerships also promote information exchange within and outside of DOE.

DOE has a long history of successful partnerships with the private sector and academia, particularly through its applied research programs. These partnerships take many forms; for example, they can be relatively simple technical assistance arrangements with small businesses or agreements involving collaborative technology development. Selected examples of DOE pollution prevention technology projects follow. These few examples do not fully represent the broad scope of pollution prevention technology being developed at DOE internally.

Tn a collaborative effort between Idaho ▲ National Engineering and Environmental Laboratory (located in Idaho Falls, Idaho), the Offices of Energy Research, Environmental Management, and five other DOE Laboratories, a web site for DOE Complexwide Materials Exchange System is now available. DOE staff can use this prototype to search, identify, and exchange, borrow or share items of interest within the DOE complex. This system is not meant to replace other exchange systems but to encourage material exchange within the complex through the use of a central searching and posting capability.

The Oakland Operations Office used the Materials Exchange System to advertise a need for more than 200 B-25 containers for disposal of low-level waste from the laboratory for Energy-related Health Research at Hanford. Savannah River Site. located near Aiken, South Carolina, responded and offered as many containers as was needed if the cost of transportation was paid. The cost of a new container was \$700 and the cost of transporting a used container from the Savannah River Site was \$300. For the first 200 containers, there was an initial cost savings of \$80,000.

Through DOE's Return-on-Investment (ROI) Program, DOE's Oak Ridge Y-12 Plant, located in Oak Ridge, Tennessee, reduced the amount of low-level radioactive (RAD) waste from building 9995 by re-designating most of the RAD areas to non-RAD areas. To accomplish this some physical changes to the lab building were made and lab procedures were modified.

he Oak Ridge National Laboratory, located in Oak Ridge, Tennessee, has created a pellet accelerator to strip paint and other unwanted materials from equipment. The accelerator uses frozen carbon dioxide pellets to strip, evaporate and separate the contaminant, such as grease or paint, from the cleaning media. Previous methods required solvents or abrasive materials that can affect the environment and increase the amount of material to be cleaned up.

The Pacific Northwest National ■ Laboratory, located in Richland, Washington, has initiated a process to redistill chemicals, such as alcohols, formalin, and xylene rather than disposing of these chemicals as hazardous waste. The redistillation process purifies contaminated chemicals suitable for reuse.

C cientists at Argonne National National Laboratory, located in

Argonne, Illinois, are conducting a study to

find methods of recycling and reusing

solvents. For example, filtration and distillation

developed with industry and other federal agencies are applied to DOE operations and facilities.

Technologies

techniques are used to purify the waste stream from the use of laboratory solvents. The solvents are then returned to the generators for reuse.

The Oak Ridge Y-12 Plant's Uranium Chip Oxidation Facility (UCOF), has replaced carbon-steel drums for storage of uranium chips with stainless-steel

drums made from recycled contaminated metal. The new drums are given to UCOF by Y-12's Waste Management at no cost. The contaminated stainless-steel drums are more durable and have a longer life than the previously used carbonsteel drums.

awrence Livermore National ▲ Laboratory (LLNL), located in Livermore, CA, is studying certain paper products with a corn starch base made by Scott Paper Company. This material can be dissolved at about 300°F and could possibly be treated at the onsite waste treatment facility at LLNL. Therefore, if coveralls, table covers, floor mats, and other paper products were made from this corn starch base, then LLNL's low-level wastestream would be greatly reduced.

The Savannah River Site and Oak Ridge Operations Offices are

jointly determining if radioactive scrap metals can be used to create canisters for Savannah River's Defense Waste Processing Facility. If this

method succeeds, the disposal costs for the scrap metal will be greatly

reduced.

eliminates chemical use, reuses the magnetic particles, and the extracted metal may be recycled.

The Argonne National Laboratory (ANL), and an industry partner have developed a way to make environmentally friendly paint and cleaning solvents marketable. New ethyl lactate-based solvents would replace trichloroethylene and methylene chloride solvents, which are known environmental contaminants. Ethyl lactate is both non-toxic and biodegradable. In the past, lactic acid-based solvents has been more costly to manufacture than the standard chemical solvents. However, ANL has lowered this cost by developing a new, patented purification-separation system for producing ethyl lactate.

The Pollution Prevention Program at the Oak Ridge Reservation (ORR) developed a database system to track and report pollution prevention progress. This database is referred to as the Oak Ridge Reservation Pollution Prevention Information Management System. The user-friendly system provides numerical and graphical data for use in various pollution prevention reports. Beginning in 1996,

Operations/Field

Offices and sites

the ROI program.

projects received

For 1997, 110

funding.

were to implement

their own version of

Pollution Prevention Funding

C ection 4-404 of E.O. 12856 directs agencies to place a "high priority on obtaining funding and resources needed for implementing" the Executive Order. Prior to fiscal year (FY) 1994, pollution prevention funding at most DOE site's came from overhead accounts and could not be tracked directly as funding for pollution prevention. Currently, DOE sites are required to record budgets on activity data sheets (ADSs) by Departmental program - the ADSs are then compiled by Headquarters (HQ) to develop the Department's five-year budget. Implementation funds are derived largely from site budgets and generator set-aside fees (GSAF).

Beginning with the fiscal year 1997 budget cycle, pollution prevention was elevated to the status of a "national program" within the Office of Environmental Management (EM). During the budget process, the individual site P2 budgets are consolidated into one "National Program" budget item that can be defended at the Headquarters level and not compete with mission activities in site budgets. Once a budget is secured, EM allocates the money back to the field based on the waste reduction potential of each site.

The High Return on Investment (HROI) program was initiated as a pilot program by the DOE Pollution Prevention Executive

Board in 1994. The program solicited site proposals for implementation funds for activities or projects that reduce operational costs in the short-term (less than 3 year payback). The program was modeled after a private industry program, and the concept is to obtain operational and waste management cost savings by investing funds in pollution prevention. In 1994, 17 projects from 6 DOE Operations/Field Offices were selected for funding in "Round One" of the pilot program. In 1996, an additional 22 HROI projects were funded from 7 Operations/Field Offices in "Round Two" of the pilot. As of May 1998, the total life-cycle savings for all projects is estimated to be \$311 million. The HROI program is a DOE HQ managed and directed program with pilot project funds distributed project-by-project. The HROI pilot projects successfully demostrated that the ROI concept works. Beginning in 1996, HQ involvement in ROI projects was phased out and Operations/Field Offices and sites were to implement their own version of the program. Between 1994 and May 1998, 261 projects received funding. ROI projects are developed and funded by site budgets or GSAF, based on site needs.

Table 7 shows total DOE pollution prevention budgets directly recorded on the ADSs and discretionary funds.

Table 7: Total DOE Dedi	cated Pollution Prevention B	Budgets for FY 97 &	2 98 (\$Millions

	FY 1997 (Actual \$ Spent)		FY 1998 (ES&H Plan)		
	Direct	ES&H	Direct	ES&H	
	Funded*	Plan**	Funded*	Plan**	
DOE Program	(dedicated)	(discretionary)	(dedicated)	(discretionary)	
Environmental Management	22.6	0	20.0	0	
Defense Programs	0	20.679	0	23.017	
Energy Research	0	.580	0	1.104	
Fossil Energy	0	.386	0	.302	
Other	0	.076	0	.077	
TOTAL	22.6	21.721	20.0	24.5	

^{*} Dedicated funds identified by separate B&R codes and ADSs; funds are directly under the control of DOE Operations Office Waste Minimization Coordinators. EM reported their data to the Office of Environmental Policy and Assistance.

^{**} All ES&H costs were generated from ES&H data collected to support the FY 1999 Congressional Budget Request.

Other E.O. 12856 Responsibilities

In addition to the Executive Order provisions previously discussed, the following paragraphs address the remaining Executive Order 12856 requirements.

Pirst, Section 5-501 of the Executive Order directed DOE to submit a preliminary list of facilities that would potentially meet the requirements for reporting under EPCRA by December 31, 1993. DOE submitted its final list of sites to EPA in April 1994. DOE identified 71 sites as potentially meeting any or all of EPCRA Sections 302-303, 311-312, and 313. The Department's list did not include those sites which potentially may report solely under EPCRA Section 304.

Section 4-405 of the Executive Order 12856 instructs the Administrator to establish a "Federal Government Environmental Challenge Program". The program is geared towards recognizing and rewarding those Federal agencies and facilities with outstanding environmental management performance.

In an October 21, 1996, letter to EPA's Assistance Administrator for Enforcement, DOE endorsed EPA's Code of Environmental Management Principles (CEMP). The principles emphasize pollution prevention, sustainable development, and key elements for a state-of-the-art environmental management program. The Department has published an Information Brief entitled, Environmental Management Systems: Code of Environmental Management Principles (CEMP), that discusses DOE's implementation of the CEMP. In a November 24, 1997 followup letter to EPA, DOE disussed how the principles of the CEMP will fit into implementation of the Department's Integrated Safety Management System (ISMS). The ISMS will help to ensure the full integration of environment, safety and health considerations into work planning and execution. Both DOE and EPA recognize that the CEMP is compatible with other environmental management system (EMS) initiatives now underway, including DOE's performancebased contrating incentives to use an environmental management system consistent with ISO 14001. Another Information Brief, Environmental Management Systems:

Institutionalizing Pollution Prevention, discusses how an EMS can institutionalize and extend DOE's approach to pollution prevention across activities, programs, and facilities. Both documents are available on OEPA's public web site.

Executive Order 12856 Section 5-508 directs agencies to grant the public "ready access to all strategies, plans, and reports required to be prepared...under this order." In addition to site resources, including site advisory boards and public reading rooms, the Department also has two on-line sources for accessing DOE pollution prevention information.

The Department has an on-line pollution prevention information clearinghouse called EPIC. EPIC is available to both public and DOE users via the Internet on the world-wideweb (http://epic.er.doe.gov/epic). EPIC has been redesigned to eliminate public user logins, increase server response, and provide upgraded search capabilities. Through EPIC, users can access a wide range of DOE documents, including, but not limited to: the DOE Pollution Prevention (P2) Strategy, DOE policy and guidance, DOE site project descriptions and accomplishments, pollution prevention opportunity assessments.

A second source for DOE pollution prevention information is the Office of Environmental Policy and Assistance's (EH-41) public web site (http://tis-nt.eh.doe.gov/ oepa/) which is located within the Office of Environment, Safety and Health's Technical Information Service (TIS). Through the EH-41 web site, users can access the complete text of environmental laws, Federal Register notices, environmental data and reports, **Environmental Guidance Documents and** information on workshops and DOE compliance. Specifically, under "environmental data and reports", users will find a section titled "P2 and TRI Reporting". Under P2 and TRI reporting, users can currently access the TRI data reported by DOE sites from 1988 to 1996 and reports, including DOE's Executive Order 12856 Annual Reports and the DOE 33/50 Program Update Report.

P2 Initiatives: Awards, Workshops, Guidance

In addition to the requirements of Executive Order 12856, DOE has conducted a number of other pollution prevention initiatives, including workshops, training sessions, conferences, awards programs, and the development of internal guidance. The following paragraphs highlight only a few of the pollution prevention initiatives undertaken by DOE.



Beginning in 1994, the Department has annually honored the work performed by DOE and contractor employees in preventing waste and pollution. The DOE Pollution Prevention Awards Program was designed to meet DOE pollution prevention incentive and technology transfer goals. In 1998, 13 awards were presented out of 62 nominations.

The Savannah River Site in Aiken, South Carolina received three awards. Savannah River was honored for saving eleven million dollars in waste management and operating costs by incorporating performance-based incentives into contracts. SRS was also recognized for developing new methods to reduce difficult-to-manage radioactive mercury wastes generated during storage of the nation's strategic heavy water supply. Mr. Keith Stone was recognized for his leadership encouraging pollution prevention efforts at Savannah River Site, including chairing the recent U.S. Department of Energy Pollution Prevention Conference hosted by Savannah River.

The Pantex Plant in Amarillo, Texas, also received three awards. One project replaced current methods for preventing corrosion on tools used during weapons dismantlement, increasing productivity by 300% and saving over \$60,000 per year. Annually, the new process will prevent generation of 475 gallons of hazardous waste, 50,000 gallons of wastewater, and will eliminate the use of a million cubic feet of natural gas. Another award-winning project cut the time needed to dismantle a weapon component from four days to one hour while completely eliminating hazardous waste, reducing worker exposure to hazardous chemicals and saving over

\$40,000 each year. Pantex commitment to cost and waste reduction resulted in their receipt of the coveted "Most Improved Large Facility" award given to the U.S. Department of Energy facility best demonstrating improved or continued excellence in pollution prevention.

The Hanford Site in Richland, Washington won two awards. Hanford was recognized for working with the City of Richland and Washington State University at Tri Cities to modify an existing DOE procedure used to evaluate pollution prevention opportunities for use by small businesses. In addition, the Hanford Site and Pacific Northwest National Laboratory in Washington State, were both recognized for their team effort to increase th amount of materials purchased that contain recycled materials. Federal agencies are required to purchase certain "designated" items composed of recycled materials. In 1997, 80% of the dollars spent on those designated products by those sites were for items with recycled content.

The Albany Research Center was recognized as the "Most Improved Small Facility" for performing an in-depth clean-up effort to drastically reduce large stored quantities of chemicals, ores, and other materials, both hazardous and nonhazardous. In 1997, the Center shipped for disposal, recycling, or reuse a total of 175,000 pounds of both hazardous and non-hazardous and excess materials.

Sandia National Laboratories-New Mexico in Albuquerque, was honored for its efforts to recycle solid waste. In 1997, Sandia processed 1,092 metric tons of solid waste, recycled 646 metric tons, and received recycling revenues of \$70,000.

The Federal Energy Technology Center, with offices in Pittsburg, Pennsylvania and Morgantown, West Virginia, was recognized for its ongoing excellence in sharing pollution prevention and recycling information with their workers and the surrounding communities.

The Nevada Test Site, near Las Vegas, was honored for changing the way a radioactive material was recycled, cutting two years from a process schedule and saving approximately \$3 million. The change eliminated an entire source of mixed hazardous/radioactive waste at the Nevada Test Site.

The Oak Ridge National Laboratory in Tennessee, was recognized for their innovative design of a system to clean a contaminated site. The design incorporates both human engineering measures as well as natural systems like an existing wetland to prevent further damage to a nearby aquatic ecosystem.

On June 1-4, 1998, DOE and the Hanford Site sponsored the 14th annual DOE Pollution Prevention Conference held in Seattle, WA. The theme of the conference was "Return on Innovation: Investing in our Future." The four day conference consisted of exhibits, oral presentations, and poster sessions. The conference provided a forum for DOE, other federal and state agencies, and the private sector to share success stories and exchange innovative pollution prevention investments achieved across the DOE complex.

DOE's Office of Defense Programs (DP) held its twelfth biannual pollution prevention technology workshop in Charleston, SC on December 9-11, 1997. The theme of the workshop was "Preserving the Past...Protecting the Future." The thirteenth biannual workshop was held on May 12-14, 1998 in Golden, Colorado. The theme of this workshop was "Peak Performance: Working Toward a Sustainable Future." The pollution prevention workshops included time for attendees to compare and exchange ideas on the success of pollution prevention programs.

DOE's Office of Environmental Management (EM-44) is offering a training and awareness program in pollution prevention and waste minimization (P2/WMin) at any DOE site. The training modules can be customized with site-specific information and examples for an entire environmental restoration (EM-40) project team or for managers only.

A lliedSignal Kansas City offered a Pollution Prevention Opportunity
Assessment (PPOA) Training course on January 20 through 22, 1998. The six-year-old program is offered at no charge to participants. Individuals involved with pollution prevention are encouraged to attend.



Pollution Prevention Opportunity
Assessment training is offered at the
DOE National Environmental Training Office
(NETO) located at the Savannah River Site.
The course introduces students to practical
applications of storage and disposal activities
through examples and exercises of the use of
flow diagrams, waste stream data analysis
assessment of data and measurements and
screening. Students learn methods to
prioritized options and determine economic
feasibiltiy in decision making about pollution
prevention and energy conservation
opportunities.

Training on Emergency Planning and Community Right-to-Know Act (EPCRA) is also offered at NETO. This course prepares site personnel who must report releases of toxic chemicals or extremely hazardous substances from DOE facilities; prepare the EPCRA Section 311 and 312 chemical inventories and prepare the EPCRA 313 toxic release inventory. Exercises based on a model DOE facility are used in addition to lectures and discussions.

The Second Annual DOE Pollution
Prevention Coordinators Meeting was
held in Denver, CO on March 17-19, 1998.
The three day meeting covered topics such
as an update on DOE Complex-Wide projects
and Pollution Prevention Site
accomplishments.

P2 Initiatives (Continued)

The East Tennessee Technology Park developed an innovative pollution prevention training video. This video is used to train employees in pollution prevention practices by illustrating recycling and technology transfer techniques.

On July 29, 1997, Lawrence Livermore National Laboratory (LLNL) received an Environmental Award of Excellence from San Joaquin County, CA for their efforts in preventing and reducing air pollutant emissions at the Site 300 Experimental Test Site. LLNL's pollution prevention efforts included substituting ozone-depleting halogenated solvents such as Freon with non-halogenated alternatives such as ethyl acetate.

The Facilities Management Organizaton at the Oak Ridge Y-12 Plant was awarded the Columbus Initiative Award for the second year in a row. The Award was presented by Lockheed Martin Energy Systems for Y-12's fluorescent and incandescent light bulb recycling project, which has resulted in cost savings to DOE.

In 1998, 315 nominations were received for the 1998 White House Closing the Circle Awards. DOE was among the 18 winners selected. An individual award was received by Arnie Edelman in the Office of Energy Research for the development of the Materials Exchange Web Site (http://epic.er.doe.gov/epic/bulletin/matexch.htm). An honorable mention was received by the Richland Operations Office for its efforts to promote the purchase of environmentally sound products at the Pacific Northwest National Laboratory.

DOE awarded Brookhaven National Laboratory (BNL) with a 1997 Pollution Prevention Appreciation Award for the site's modern ultrasonic cleaning facility for parts used in high-vacuum research systems. BNL's old cleaning facility used caustics and hydrofluoric and nitric acids to clean parts contaminated with oils and grease. At the new facility, strong soaps, mild citric acid, hot water, and ultrasonics are used instead.

n March 21, 1996, the Office of Environmental Management issued the final version of the "Implementation Plan for the Generator Set-Aside Fee" (GSAF) pilot demonstration as guidance to the pilot sites. On January 7, 1997, the final report of assessments and recommendations was issued for the generator set-aside fee pilot program. The Pollution Prevention Executive Board agreed on February 20, 1997, to continue the program and to expand it to other Department sites. The program was developed to encourage waste generator accountability, promote waste reduction, and to provide a source of funds for P2 project implementation. A March 6, 1998 report summarizes the GSAF Pilot Project results for Fiscal Years 1996 and 1997. The results indicate that the GSAF is an effective and flexible method of implementing pollution prevention projects and minimizing waste generation.

In December of 1997, DOE's Office of Environmental Policy & Assistance (OEPA) issued an Environmental Guidance Regulatory Bulletin on "Addition of Facilties in Certain Industry Sectors; Revised Interpretation of Otherwise Use; Toxic Release Inventory Reporting Community Right-to-Know." The Regulatory Bulletin provides a summary of the reporting requirements for the seven new industry groups and clarification of reporting activities established under the TRI-Phase II final rule. The guidance can be found on the OEPA website (http://tis-nt.eh.doe.gov/oepa/).

In March 1998, EPA and DOE signed an agreement to promote pollution prevention and sustained compliance with environmental safety regulations at the Brookhaven National Lab in Upton, New York. Under this unique agreement, DOE will support comprehensive evaluations of environmental processes and activities at this site.

P2 Initiatives: Waste Reduction

Compared to other sources of DOE waste, the generation of toxic chemical releases and transfers at DOE facilities represents a small portion of the Department's total annual waste generation. Since DOE's pollution prevention strategy is to "reduce the generation of all waste streams", many of the

Department's pollution prevention efforts, including the allocation of funds for pollution prevention, have been focused more on reducing the generation of radioactive, low-level mixed, hazardous and sanitary wastes.

In a May 3, 1996 memorandum, the Secretary of Energy demonstrated the Department's commitment to pollution prevention by establishing goals for routine operations, all operations, and affirmative procurement (See Table 8 and Appendix A). These goals were developed in accordance with recent Executive Orders and internal

departmental guidance. Similar to the TRI goal established in accordance with E.O. 12856, these goals are to be achieved by December 31, 1999 and will be measured annually against a 1993 baseline. DOE field sites are to set site-specific goals in their P2 plans to assist in achieving the departmental goals.

Further, in September Source Reduction 1998, DOE's Office of Recycling **Environmental Management** released the 1997 Annual Treatment Report of Waste Generation and Pollution Prevention Progress. Disposal This report presents and analyzes the DOE complex-wide waste generation and pollution prevention activities at each reporting site. The report concluded that routine operations waste generation (excluding sanitary waste) increased 3% from 1996 to 1997, and decreased 61% overall from 1993 to 1997. The report is located on DOE's Office of Pollution Prevention web site (http://

twilight.saic.com/wastemin/).

Table 8: DOE Source Reduction and Recycling Performance, Compared to 1993

Goal	1993 Baseline	1997 % Reduction ²	Dec. 31, 1999 Goal
Reduce the total releases and off-site transfers for treatment and disposal of toxic chemicals	4.68 million pounds	84%	50%
Reduce the generation of radioactive waste*	37,392 cubic meters	60%	50%
Reduce the generation of low-level mixed waste	3,524 cubic meters	59%	50%
Reduce the generation of hazardous waste	7,921 metric tons**	77%	50%
Reduce the generation of sanitary waste	122,966 metric tons	51%	33%
Divert sanitary waste for recycling	***	44%	33%
Affirmative procurement of EPA-designated recycled products	***	56%	100%

U.S. Department of Energy Pollution Prevention Program Plan (DOE/S-0118)

² 1997 Waste Generation and Pollution Prevention Progress Report (DOE/EM-0365)

^{*} Represents low-level waste only.

^{**} Includes RCRA-regulated, state-regulated and TSCA- regulated wastes.

^{***}Recycling and affirmative procurement baselines are established annually.

Appendix A

Secretary of Energy Memorandum May 3, 1996

The Secretary of Energy

Washington, DC 20585

May 3, 1996

MEMORANDUM FOR HEADS OF DEPARTMENTAL ELEMENTS

FROM: HAZEL R. O'LEARY

SUBJECT: Departmental Pollution Prevention Goals

The Department of Energy pollution prevention strategy is to reduce the generation of all waste streams and thus minimize the impact of departmental operations on the environment. Preventing pollution also reduces risks to the health and safety of workers and the general public and saves scarce budget dollars. To demonstrate the Department's commitment to pollution prevention, we have set the following goals to be achieved by December 31, 1999, using calendar year 1993 as a baseline year.

For Routine Operations:

- Reduce by 50 percent the generation of radioactive waste.
- Reduce by 50 percent the generation of low-level mixed waste.
- Reduce by 50 percent the generation of hazardous waste.
- Reduce by 33 percent the generation of sanitary waste.
- Reduce by 50 percent total releases and off-site transfers for treatment and disposal of toxic chemicals.

For All Operations, Including Cleanup/Stabilization Activities:

Recycle 33 percent of sanitary waste.

For Affirmative Procurement:

 Increase procurement of Environmental Protection Agency-designated, recycled products to 100 percent, except where they are not commercially available competitively at a reasonable price or do not meet performance standards.

Operations Offices will direct sites under their purview to set site-specific goals to assist in achieving the departmental goals. Progress toward meeting the departmental goals will be reported annually to me. It is the responsibility of each Federal and contractor manager to work diligently to meet these goals; to aggressively seek ways to reduce the amount of pollutants generated within the workplace; and to conserve, reuse, and recycle resources.

Department of Energy Pollution Prevention Strategy

UNITED STATES DEPARTMENT OF ENERGY POLLUTION PREVENTION STRATEGY

POLICY STATEMENT:

"The Department of Energy (DOE) embraces pollution prevention as its strategy to reduce the generation of all waste streams and thus minimize the impact of departmental operations on the environment, as well as improving safety of operations and energy efficiencies. I expect the Department to continue the leadership shown by our voluntary compliance with the Emergency Planning and Community Right-to-Know Act (EPCRA) and our participation in the Environmental Protection Agency's 33/50 program which focuses on near-term pollution prevention efforts of 17 priority toxic chemicals."

"Recognizing that pollution prevention is the Department's preferred approach to meeting its environmental responsibilities, I am directing that Cognizant Secretarial Offices, working in conjunction with the Pollution Prevention Executive Board, identify, plan, and allocate funds for field implementation of waste minimization and pollution prevention activities during the departmental budget review process. This information will be used to provide an identified budget each year dedicated to pollution prevention activities." -- Secretary Hazel R. O'Leary, 12/28/93

RESPONSIBLE INDIVIDUAL:

DOE is committed to ensuring the success of its pollution prevention goals. Because of this commitment, the Department has designated Deputy Secretary of Energy William H. White as the senior manager responsible for coordination of the Department's efforts in pollution prevention. Mr. White may designate another individual to act on his behalf should the need arise.

BACKGROUND:

The Department of Energy has had a longstanding commitment to implementing the principles contained in Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements." DOE facilities have been active in complying with EPCRA since its passage in 1986. The Department has provided guidance and training materials on the general requirements of EPCRA, and specific guidance and training on Toxics Release Inventory (TRI) reporting. In fact, the Department has led the Federal sector in TRI reporting by voluntarily committing to report TRI releases prior to the issuance of the Executive Order, and has worked closely with EPA during 1992 and 1993 on resolving issues of Federal facility TRI reporting.

The Department has also been a leader in the development and implementation of pollution prevention programs and activities, including voluntary participation in EPA's 33/50 program. In 1988, 12 DOE facilities filed Form R reports with EPA as sites which used or stored chemicals to be reported under TRI. Since then, DOE facilities have met, ahead of schedule, the Department's goal of a 50 percent reduction in TRI releases and transfers of the seventeen priority toxic chemicals covered by the EPA 33/50 program. In addition, facility-specific pollution prevention plans are required under DOE Order 5400.1, General Environmental Protection Program, and the Department has issued guidance to its facilities on the preparation of those plans. DOE has actively involved nearly all Departmental organizations in pollution prevention activities at the staff level through the Waste Reduction Steering Committee, and at the senior management level through the Pollution Prevention Executive Board, chaired by the Deputy Secretary of Energy.

The combined effort of these groups produced the *Department's 1994 Waste Minimization/ Pollution Prevention Crosscut Plan*, as well as a program to identify and implement pollution prevention projects which can produce successful results in the near-term. In addition, the Department has established a pollution prevention funding mechanism through the Department-wide Environment, Safety and Health Management Plan. This will ensure that pollution prevention programs are funded that reduce toxic emissions and waste generation in a cost effective manner.

Every effort has been, and will continue to be, made to involve the public and other stakeholders in monitoring the Department's progress in meeting the requirements of Executive Order 12856.

The attached bibliography details past Departmental efforts to implement pollution prevention through Secretarial memoranda, guidance documents, and planning documents. The objectives and goals which follow build upon the previous efforts and upon the Department's other pollution prevention successes to date.

OBJECTIVE 1. EFFECTIVELY INSTITUTIONALIZE THE POLLUTION PREVENTION ETHIC THROUGH TRAINING AND AWARENESS IN ALL MISSION AREAS

DOE OFFICES OF RESPONSIBILITY: All Cognizant Secretarial Offices

Sub-objective 1.1 Develop an environmentally aware DOE community through education and training in pollution prevention so that all personnel understand the DOE commitment to utilize pollution prevention through source reduction, where practicable, as the primary means of achieving and maintaining compliance with all applicable Federal, State, and local environmental regulations.

- Equip our work force with the pollution prevention skills to accomplish DOE's missions while protecting the environment.
- Institutionalize and continually improve appropriate pollution prevention training for our personnel.
- Integrate pollution prevention measures into all operations.

Sub-objective 1.2 Promote pollution prevention through multimedia outreach/awareness programs and partnerships.

- Strengthen working relationships with regulators at all levels.
- Foster partnerships with stakeholders and industry by:
 - participating in local community emergency planning;
 - enhancing the coordination and effectiveness of local emergency response capabilities;
 - providing communities with information on toxic chemical use and release by reporting under TRI;
 - promoting the elimination of the use of hazardous substances, a reduction in toxic emissions, and a reduction in the generation of hazardous waste and DOE facilities;
 and
 - encouraging affirmative procurement of non hazardous chemicals and materials and products with recycled content, and the reuse and recycling of materials when possible.
- Demonstrate innovative leadership in and commitment to pollution prevention.
- Disseminate information on pollution prevention technologies throughout the DOE complex.
- Work with other Federal agencies on information exchange.

Sub-objective 1.3 Encourage and recognize outstanding pollution prevention efforts through existing and new awards/incentive programs.

Appendix B

OBJECTIVE 2: REDUCE RELEASES AND OFF-SITE TRANSFERS OF TOXIC CHEMICALS TO THE ENVIRONMENT

DOE OFFICES OF RESPONSIBILITY: All Cognizant Secretarial Offices

Sub-objective 2.1 Minimize releases of toxic chemicals to the environment and off-site transfers of such toxic chemicals. To the maximum extent possible, such reductions shall be achieved through source reduction.

GOAL: By December 31, 1999, achieve a Department-wide 50 percent reduction of total releases of toxic chemicals to the environment and off-site transfers of such toxic chemicals from the baseline year (DOE will determine the baseline year after further study).

Sub-objective 2.2 Establish site-specific goals to reduce the generation and use of radioactive and other hazardous materials to the extent practicable.

Sub-objective 2.3 Develop, maintain, and implement pollution prevention plans at each major facility. These plans may include baselines, pollution prevention opportunity assessments, and investment strategies.

Sub-objective 2.4 Implement cost-effective pollution prevention at all DOE facilities.

Sub-objective 2.5 Submit annual reports to the EPA Administrator regarding progress made toward achievement of the above goal, as well as progress made in complying with all other aspects of Executive Order 12856.

OBJECTIVE 3: INCORPORATE POLLUTION PREVENTION POLICY INTO THE ACQUISITION PROCESS

DOE OFFICES OF RESPONSIBILITY: All Cognizant Secretarial Offices

Sub-objective 3.1 Integrate environmental considerations into acquisition strategies, plans, and the source selection process. Employ life cycle analyses and total cost accounting principles in procurements, as appropriate.

GOALS: 1. Establish a Department-wide plan, with goals, to eliminate or reduce unnecessary acquisitions of hazardous substances or toxic chemicals.

2. Establish a Department-wide plan, with goals, to reduce DOE manufacture, process, and use of extremely hazardous substances and toxic chemicals.

Sub-objective 3.2 Integrate pollution prevention considerations when developing mission needs and when developing and revising acquisition documentation.

GOAL: By August 3, 1995, review DOE standards and specifications to identify opportunities to eliminate or reduce unnecessary acquisitions of hazardous or toxic substances, and complete all necessary revisions by December 31, 1998.

OBJECTIVE 4: ACHIEVE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW REPORTING

DOE OFFICES OF RESPONSIBILITY: All Cognizant Secretarial Offices

Sub-objective 4.1 Develop and maintain a comprehensive inventory of toxic chemicals, extremely hazardous substances, and hazardous chemicals at each DOE facility.

Sub-objective 4.2 Ensure that each facility fulfills all EPCRA reporting responsibilities, including:

- Emergency planning notification.
- All other information needed for local emergency planning.
- Chemical inventory information to local emergency planning committees.
- Emergency notification to local emergency response teams.
- TRI reporting.

OBJECTIVE 5: ADDRESS OTHER ENVIRONMENTAL QUALITY ISSUES AND POLLUTION PREVENTION FOCUS AREAS

DOE OFFICES OF RESPONSIBILITY: All Cognizant Secretarial Offices

Sub-objective 5.1 Address the requirements of Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," signed by the President on February 11, 1994. This Executive Order focuses on achieving environmental justice by promoting non-discrimination in DOE's programs that affect human health and the environment.

Sub-objective 5.2 Promote water conservation, energy efficiency, and use of renewable energy technologies, as required by Executive Order 12902, "Energy Efficiency and Water Conservation at Federal Facilities."

- Minimize life cycle costs by utilizing energy efficiency, water conservation, and renewable energy resources in the design and construction of new facilities, as well as in the modification of existing facilities.
- **GOALS:** 1. By December 31, 2004, achieve a 30 percent Department-wide reduction in energy consumption from the 1985 baseline.
 - 2. By December 31, 2004, increase Department-wide energy efficiency by at least 20 percent from the 1990 baseline.

Sub-objective 5.3 Optimize the use of environmentally preferable materials in the planning, construction, and maintenance of facilities. Establish and promote efficient material/energy-use practices through conservation, reutilization, materials substitution, recycling, affirmative procurement, and the creation of markets for recycled materials, as required by Executive Order 12873, "Federal Acquisition, Recycling, and Waste Prevention."

Sub-objective 5.4 Incorporate pollution prevention principles, techniques, and mechanisms into all planning and decision making processes. Evaluate and report those efforts in documentation required by the National Environmental Policy Act.

OBJECTIVE 6: DEVELOP, TRANSITION, AND APPLY INNOVATIVE POLLUTION PREVENTION TECHNOLOGIES

DOE OFFICES OF RESPONSIBILITY: All Cognizant Secretarial Offices

Sub-objective 6.1 Develop and support a DOE Strategic Plan to identify and prioritize research, development, demonstration, testing, and evaluation (RDDT&E) needs.

- Focus pollution prevention RDDT&E on developing and implementing critical technologies needed for source reduction.
- Encourage user participation in formulating requirements.

Sub-objective 6.2 Identify and fund high priority RDDT&E programs.

• Identify, develop, and implement a RDDT&E plan.

Sub-objective 6.3 Coordinate DOE's pollution prevention RDDT&E programs with those of other Federal agencies, academia, and private industry.

- Identify material and process substitutes in DOE technologies that have government-wide as well as commercial application for expedited implementation.
- Foster cooperative interagency, Federal-State, and government-industry partnerships to solve pollution prevention issues.
- Actively demonstrate and implement "off-the-shelf" technologies that ensure the mission capability of DOE facilities.
- Integrate pollution prevention measures into all appropriate operations.

Sub-objective 6.4 Encourage the development of strong domestic and foreign markets for DOE-developed, innovative pollution prevention technologies.

- Develop, demonstrate, test, evaluate, and implement innovative pollution prevention technologies at DOE facilities.
- Forge partnerships with environmental technology firms abroad to export DOE-developed pollution prevention technologies.

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